APPROACH-MOTIVATED POSITIVE AFFECT

REDUCES BROADENING OF ATTENTION

A Thesis

by

PHILIP A. GABLE

Submitted to the Office of Graduate Studies of
Texas A&M University
in partial fulfillment of the requirements for the degree of

MASTER OF SCIENCE

May 2007

Major Subject: Psychology

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Committee Members, Brandon Schmeichel
Jamie Callahan
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ABSTRACT

Approach-Motivated Positive Affect

Reduces Broadening of Attention. (May 2007)

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Chair of Advisory Committee: Dr. Eddie Harmon-Jones

Research has found that positive affect broadens attention. However, the type of positive affect previously manipulated has been low in approach motivation. High approach-motivated positive affect should reduce the breadth of attention, as organisms shut out irrelevant perceptions and cognitions while they approach and attempt to acquire desired objects. Three studies examined the attentional consequences of approach-motivated positive affect states. Consistent with predictions, participants showed less global attentional focus after viewing approach-motivating positive pictures as compared to neutral pictures (Studies 1 and 2). Specifically, Study 1 used approach-motivating pictures of appetitive desserts, while Study 2 used pictures of cute animals. Neutral pictures were of varying neutral objects. Study 3 manipulated both affect and approach motivation. Less global focus was found for participants who viewed the approach-motivating pictures and had the expectancy to obtain the items as compared to other participant groups. The results indicate that high approach-motivated positive affect reduces the breadth of attentional focus, in contrast to the broadening of attentional focus that has been found with low approach-motivated positive affect.

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INTRODUCTION

Much work has focused on the cognitive and attentional consequences of positive affect. Research has found that positive affect creates a broadening of cognitive processing in categorization (Isen & Daubman, 1984), unusualness of word association (Isen, Johnson, Mertz, & Robinson, 1985), and social categorization (Isen, Niedenthal, & Cantor, 1992). In past studies that found positive affect produced broadening, positive affect was created by giving the participants a gift, having participants watch a funny film (Isen & Daubman, 1984; Isen et al., 1985; Isen, Daubman, & Nowicki, 1987; Isen et al., 1992), recall a pleasant memory (Murray, Sujan, Hirt, & Sujan, 1990), or write about a positive life event (Gasper & Clore, 2002). The view that positive affect creates attentional and cognitive broadening is widely accepted and supported by many investigations (Fredrickson, 1998).

Indeed, researchers have suggested that the effect of positive affect on attentional and cognitive broadening is "one of the most robust and widely confirmed findings in the affect literature" (Isen, 2002, p.57). Fredrickson and Branigan, however, suggested that the effects of all varieties of positive emotions need to be explored. In 2005, they wrote, ". . . do broadening effects extend to positive emotions beyond amusement and contentment? Will the effects generalize to pre-goal attainment positive emotions such as desire, interest, or engagement?" (Fredrickson & Branigan, 2005, p.328).

This thesis follows the style of *Psychological Science.*

Pre-goal attainment positive emotions are emotions associated with heightened approach motivation. All past research that found positive affect associated with broadening used positive affects that evoked low intensity approach motivation (or were post-goal attainment positive emotions). Positive emotions, however, vary in the degree to which they are associated with approach motivation. Some positive affective states are low in approach motivation (e.g., joy after watching a funny film), whereas others are relatively high in approach motivation (e.g., enthusiasm or desire while approaching an attractive object). As Fredrickson and Branigan (2005) noted, the complete range of pleasant feelings has not been examined. Along these lines, researchers have shown that emotions within the same valence may produce different cognitive and behavioral effects and have different physiological substrates (Lerner & Keltner, 2000; Harmon-Jones & Allen, 1998). And others have begun to argue for the existence of different positive emotions (Ekman, 2003; Keltner & Haidt, 2003). The current studies seek to examine the consequences of positive emotions that are high in approach motivation.

The present work is predicated on conceptual models of emotion that emphasize emotions' motivational functions (Frijda, 1986; Lang, 1995). For example, Lang, Bradley, and Cuthbert (1990) proposed a dimensional model of emotion with two orthogonal dimensions, valence and arousal. According to this conceptual view and its empirical base, intense approach motivation is associated with stimuli that are positive and arousing. Laboratory stimuli that reliably elicit approach are pictures of erotica, cute babies and animals, and food.

Positive emotions vary in motivational intensity and may have different effects on attention and cognition. Indeed, Lang and colleagues' program of research has revealed that the processing of pleasant stimuli varies in approach motivation, and this processing affects autonomic, reflexive, and electro-cortical responses (Lang, 1995). Given the importance of approach-motivated positive affective states to biologically important outcomes such as reproduction, social attachment, and the ingestion of food and water, it seems likely that such states would not be associated with increased attentional and cognitive broadening. Rather, I would expect them to be associated with reduced broadening, as organisms shut out irrelevant perceptions and cognitions while they approach and attempt to acquire the desired objects. Easterbrook's (1959) idea that emotional arousal causes a reduction in the "range of cue utilization" is consistent with my prediction. However, Easterbrook (1959) indicated that his analysis referred to drive, which he viewed as negative. He defined drive as "a dimension of emotional arousal or general covert excitement, the innate response to a state of *biological deprivation or noxious stimulation*… The emotional arousal is greater in neurotic than in normal subjects…" (p. 184, italics added). Clearly, he was only considering negative emotive states.[1]

[1] One experiment did manipulate a variable that might have caused approach positive affect, but affect was not measured in the experiment, so it is difficult to know whether this state was created. In this experiment, Bahrick, Fitts, & Rankin (1952) manipulated monetary incentives for performing a central task. They found that the manipulation affected performance on the central task and hindered peripheral task performance when the participants were only rewarded for central task performance. When rewarded for good performance on both tasks simultaneously, central task performance improved but peripheral task performance was not affected. Easterbrook (1959) described this experiment in deprivation terms and as supporting his model. However, the results from the latter condition described above did not show a decrease in peripheral task performance with high incentive.

Research has suggested that appetitive and consummatory components of reward processes relate to different types of positive affect. While seeking out and obtaining a reward, high approach pregoal positive affect occurs, whereas consummatory responses after obtaining a reward are associated with low approach positive affects such as satisfaction (Knutson & Wimmer, 2007). Neurobiological differences exist between pregoal and postgoal attainment positive affect in the prefrontal cortex, nucleus accumbens, and other structures (Davidson & Irwin, 1999; Knutson & Peterson, 2005; Knutson & Wimmer, 2007). Pregoal positive affect may have emerged to assist in promoting goal-directed action.

To expand work on the effects of positive affect on attentional processes, I designed three studies to examine the consequences of approach-motivated positive affect states on attention. Whereas previous studies found low approach positive affect broadens attention, I predicted that high approach positive affect would reduce broadening.[2] In the first two studies, participants viewed approach-motivating pictures (in Study 1, attractive desserts; in Study 2, cute animals) and neutral pictures. Study 3 used a between-subjects design, wherein affect was manipulated using attractive dessert pictures versus neutral pictures and approach motivation was manipulated through the expectancy to obtain the items in the pictures. In all three studies, breadth of attention was measured using the Navon (1977) global-local letter task, a widely used, objective

[2] I use the term broadening, as has been done in much past work on the effects of positive emotion on attention and cognition (Fredrickson, 2001; Fredrickson & Branigan, 2005). I recognize that the concept of attentional broadening may be complex and involve several processes (Wachtel, 1967). Also, in this article, I do not make a distinction between affect and emotion; the terms are used as synonyms.

measure of attentional breadth (Yovel, Revelle, & Mineka, 2005; Forster & Higgins, 2005; for a review, see Kimchi, 1992).

STUDY 1

Method

Participants were 136 (65 female) introductory psychology students. They volunteered in exchange for course credit. Participants were seated at individual computer terminals separated by dividers with eight possible participants per session. Instructions were given orally by the experimenter and on each participant's monitor. Participants viewed 70 pairs (6 neutral practice trials) of pictures. A fixation cross appeared for 500 ms before each picture. The first picture was either a food object or a neutral object picture presented for 6 s. Object pictures were modeled after those from the International Affective Picture System (Lang, Bradley, & Cuthbert, 2005). The food pictures were of highly attractive dessert items. The neutral pictures were of objects that would not evoke motivation, such a plastic fork or an ordinary white paper plate. Food and neutral item pictures were matched for color, brightness, and object size. After the object picture was displayed, a fixation cross was displayed for 500ms. Then, a letters picture was displayed until the participant responded. If the participant did not respond after 5 s, it was considered an incorrect response, and the next trial began. The inter-trial interval was 3 s.

Past research testing the relationship between positive affect and attentional broadening has used local-global processing tasks to assess broadening (Fredrickson & Branigan, 2005; Gasper & Clore, 2002). One of the most widely used measures of the attentional broadening is the Navon (1977) letters task (Forster & Higgins, 2005), which

I used. In the task, each of the letters pictures was a large letter composed of smaller letters. The large letters were made up of five closely spaced local letters on each vertical or horizontal line (e.g., an *H* of *F*s), modeled after Forster and Higgins (2005). Participants were asked to respond "as quickly as possible" if the picture contained the letter *T* by pressing the left shift key or the letter *H* by pressing the right shift key. Global targets were those in which a *T* or an *H* was composed of smaller letter *L*s or *F*s. Local targets were those where a large *L* or *F* was composed of smaller *T*s or *H*s. Faster responses to the large letters indicate a broad or global focus, whereas faster responses to the small letters indicate a narrow or local focus. A total of 32 local trials and 32 global trials were randomly presented such that no pair of letters pictures was the same.

Following the picture pairs, participants were shown the food and neutral item pictures again and asked to indicate how they felt while viewing the picture. Using the Self-Assessment Manikin (Bradley & Lang, 1994), participants rated each picture on pleasure (1 = *very pleasing*; 9 = *very unpleasing*) and arousal (1 = *exciting*; 9 = *calm*). A third rating scale measured approach motivation. It asked participants to indicate how much they wanted to move towards (1) or move away (9) from the object in the picture (Frijda, Kuipers, & Schure, 1989). Pictures were displayed for 6s before participants indicated their ratings.

Results

Response times for the letters pictures were logarithmically transformed. Incorrect responses (2.30% of the sample) and those more than 3 standard deviations

from the mean (0.75% of the sample) for each stimulus were removed (Fazio, 1990). Practice trials were not included in the analyses.

A 2 (food or neutral picture) X 2 (local or global target) within-subjects ANOVA revealed a significant interaction, F (1, 135) = 30.13, $p < .001$, $\eta_p^2 = .18$. After neutral pictures, participants responded faster to global targets than local targets, $p < .001$. This finding is consistent with Navon (1981); participants generally show a global bias. In contrast, after food pictures, participants responded slower to global targets than local targets ($p < .001$; see Figure 1). Also, reaction times to global targets were slower after food pictures than after neutral pictures, $p < .001$. Reaction times to local targets did not differ between food and neutral pictures, $p > .60$.

In addition, a difference score was created for each picture type (local target reaction time minus global target reaction time). Higher scores indicate faster processing for global targets than local targets (broadly focused). Based on our prediction that approach-motivated pictures, as compared to neutral pictures, should cause a less broad focus, I conducted a planned comparison by coding picture type from more (neutral pictures) to less (food pictures) global focus. In support of predictions, participants were less broadly focused after food pictures (M = -.03, SE = .01) than after neutral pictures (M = .04, SE = .01), F (1, 135) = 30.13, $p < .001$, $\eta_p^2 = .18$.

For picture ratings, a 3 (valence, arousal, or motivation rating) X 2 (food or neutral picture) within-subjects ANOVA revealed a significant interaction, F (2, 268) = 8.14, $p < .001$, $\eta_p^2 = .06$. Food pictures were more pleasing (M = 3.41, SE = .12) and more arousing (M = 4.40, SE = .16) than neutral pictures (M = 5.31, SE = .07; M =

6.67, *SE* = .12), $p < .001$. In addition, participants wanted to approach the food pictures (*M* = 3.55, *SE* = .119) more than the neutral pictures (*M* = 5.53, *SE* = 0.08), $p < .001$.

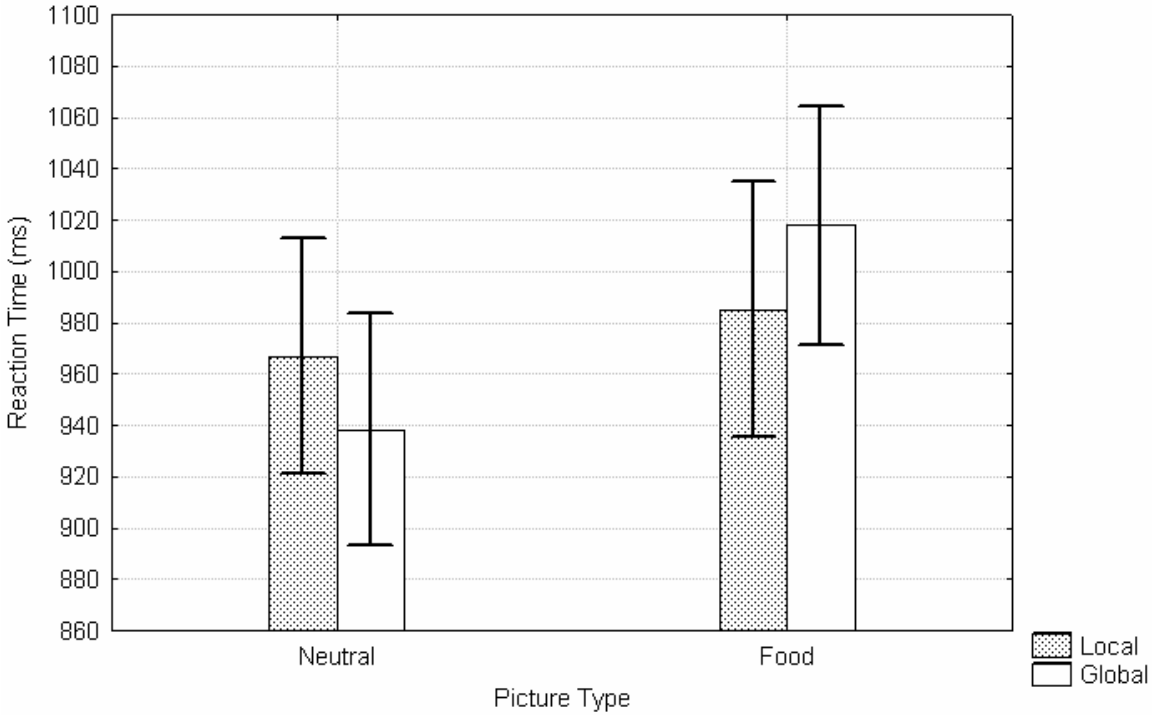

Figure 1. Study 1 reaction times for local and global targets between neutral and food pictures.

STUDY 2

To ensure that the findings from Study 1 were not spurious and due to the specific pictures used, I ran a second study using different approach-motivating positive affect pictures. I predicted that Study 2 would conceptually replicate the above results when a different set of pictures was presented.

Method

Participants were 113 (46 female) introductory psychology students who participated for course credit. The methods of this study were the same as in Study 1, with one exception: instead of viewing food pictures, participants were shown adorable animal pictures designed to evoke approach motivation (i.e., viewers would want to pet or hold the animals in the pictures). A different set of neutral pictures was also used, following the same matching criteria used in Study 1.

Results

Response times towards the local and global pictures were log transformed; incorrect responses (3%) and outlying responses (0.69%) were removed. Practice trials were not included in the analyses.

Results replicated those from Study 1. A 2 (animal or neutral picture) X 2 (local or global target) within-subjects ANOVA revealed a significant interaction, F (1, 112) = 24.77, $p < .001$, $\eta_p^2 = .18$. After neutral pictures, participants responded faster to global targets than local targets, $p < .01$. In contrast, after animal pictures, participants responded faster to local targets than global targets ($p < .001$; see Figure 2). Also,

reaction times to global targets were slower after animal pictures than after neutral pictures, $p < .001$. Reaction times to local targets did not differ between animal and neutral pictures, $p > .80$.

A planned comparison using the difference score of local target reaction time minus global target reaction time was contrast coded from more (neutral pictures) to less (animal pictures) global focus. As predicted, participants were less global after animal pictures ($M = -.04$, $SE = .01$) than after neutral pictures ($M = .03$, $SE = .01$), $F(1, 112) = 24.77$, $p < .001$, $\eta_p^2 = .18$.

For picture ratings, a 3 (rating type) X 2 (picture type) within-subjects ANOVA revealed a significant interaction, $F(2, 224) = 24.32$, $p < .001$, $\eta_p^2 = .18$. Animal pictures were rated as more pleasing ($M = 3.25$, $SE = .10$) than neutral pictures ($M = 5.34$, $SE = .08$), more arousing ($M = 4.73$, $SE = .16$) than neutral pictures ($M = 7.04$, $SE = .13$), and more approachable ($M = 4.17$, $SE = .12$) than neutral pictures ($M = 5.73$, $SE = 0.10$), $p < .001$.

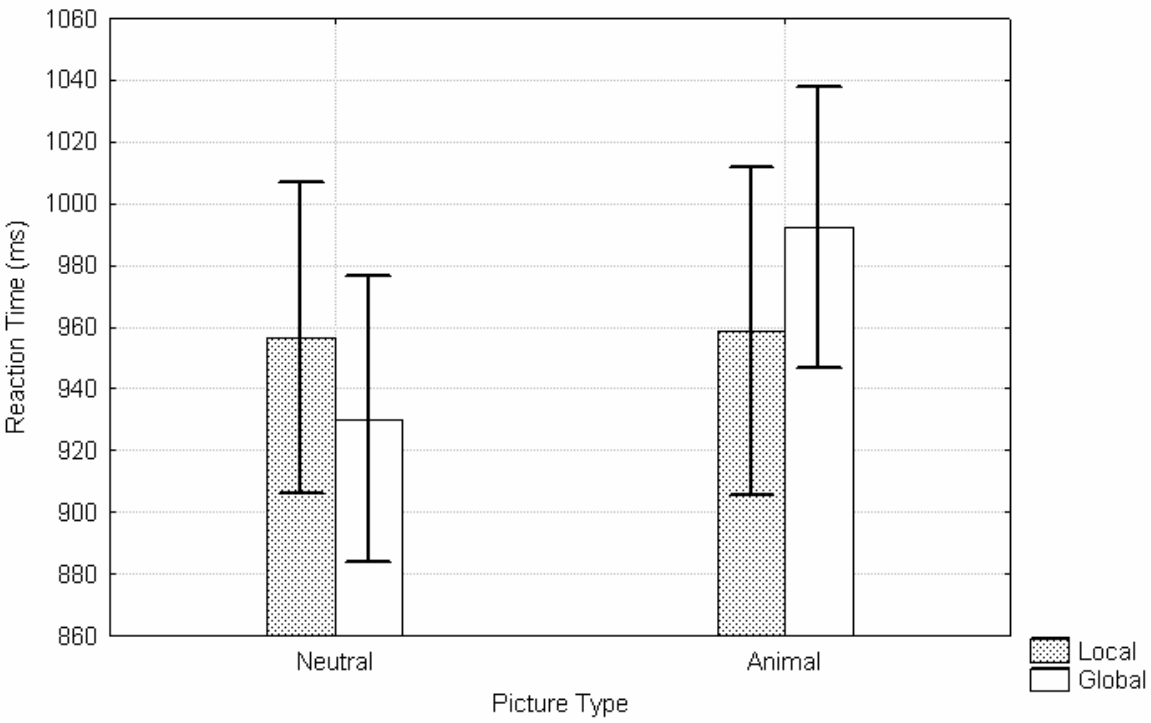

Figure 2. Study 2 reaction times for local and global targets between neutral and animal pictures.

STUDY 3

Studies 1 and 2 produced robust evidence in favor of the prediction that high approach positive affective stimuli would reduce broadening of attention, an effect opposite to that obtained with low approach positive affective stimuli. The self-reported responses to the pictures suggested that the positive stimuli used in Studies 1 and 2 evoked approach motivation. To further test whether approach motivation causes the reduction of attentional breadth, Study 3 manipulated approach motivation by varying the expectancy to act, as past research and theory has suggested that the expectancy to act affects motivational intensity (for reviews, see Brehm & Self, 1989; Wright & Kirby, 2001).

Studies 1 and 2 used within-subjects designs and produced robust evidence. However, all of the past studies on positive affect and attention have used between-subjects designs, which are typically less statistically powerful. Perhaps this explains why some past experiments have failed to find differences between positive and neutral conditions on attentional broadening (Gasper & Clore, 2002). Because all past studies on positive affect and attentional broadening used between-subjects designs, I believed it important to assess whether high approach positive affect would reduce attentional broadening in such designs. Thus, Study 3 used a between-subject design.

To manipulate affect, participants viewed either food pictures or neutral pictures, as in Study 1. However, because of the above ideas (what ideas, specifically?)as well as concerns about past failures to find differences between positive and neutral affect

conditions in between-subjects designs (Gasper & Clore, 2002), I thought it important to increase the impact of the approach-motivated positive affect manipulation. To accomplish this, I manipulated the intensity of approach motivation by manipulating the expectancy to consume or take the positive objects, as previous studies have found that such manipulations cause greater approach motivation (Harmon-Jones, Sigelman, Bohlig, & Harmon-Jones, 2003; Harmon-Jones, Lueck, Fearn, & Harmon-Jones, 2006). These past studies used similar expectancy manipulations to produce angry states that differed in approach motivational intensity. In this past work, the expectation to act upon one's anger increased relative left frontal cortical activation, a brain region involved in approach motivation. Moreover, in this past work, increased cortical activation related to behavioral measures of approach motivation (Harmon-Jones et al., 2003). However, the expectancy of action did not affect self-reports of anger; that is, both the low expectation and the high expectation to act produced increased self-reported anger relative to no-anger conditions.

For Study 3, I predicted a linear effect such that participants who viewed food objects and expected to take them would be the least attentionally broad, followed by participants who simply viewed the food pictures, who would in turn be followed by participants who viewed neutral pictures (and expected to take them).

Method

Participants were 49 female introductory psychology students. They participated in exchange for course credit. Each participant was run individually.

After obtaining informed consent, participants completed a self-report emotion questionnaire. Then, they viewed either 36 food pictures or 36 neutral pictures, used in Study 1. Six neutral pictures preceded the picture set. To increase approach motivation in participants who viewed the food pictures, one group was given the expectancy to consume the items, while another group of participants was not given the expectancy to consume the items (Harmon-Jones et. al. 2006). Participants who viewed the neutral pictures were given the expectancy to take the items they viewed. Because the neutral items are not desirable, they should not evoke approach motivation. To save resources, a neutral picture/no-expectation-of-consuming condition was not run. Following the six example pictures, expectancy to obtain the items was manipulated by telling two-thirds of participants, “At the end of the experiment, you will be presented with a large tray that contains most of the items you will see in the pictures. You will be able to take as many as you want."

Each picture was displayed for 12 s and preceded by a fixation cross for 2 s. ITI varied between 6 and 8 s. After viewing the entire picture set, participants completed another emotion questionnaire scale. Then, they completed the Navon letters task, which consisted of 48 (24 local, 24 global) pictures randomly presented, with the first twelve trials being practice (Forster & Higgins, 2005). Following completion of the letters task, all participants were presented with a tray of dessert items and allowed to take an item of their choice.

The emotion questionnaire included 24 words presented in a random order. It asked participants to indicate how they felt at the moment they were completing the

questionnaire (1 = *not at all*; 7 = *extremely*). Words were included to attempt to assess high approach (eager, enthusiastic, interested, and excited; baseline α = .66; after pictures α = .86), moderate approach (happy, glad, pleasant, and good mood; α = .77, α = .92), and low approach (tranquil, serene, satisfied, and content; α = .59, α = .80) positive affect. Negative affect words were either high withdrawal (afraid, disgusted, distressed, and nervous; α = .47, α = .46) or low withdrawal (sad, down, discouraged, and gloomy; α = .58, α = .87), or high approach motivation (angry, mad, irritated, and frustrated; α = .74, α = .87).

Results

Response times for the letters pictures were logarithmically transformed. Incorrect responses (3.2%) and outlying responses (0.17%) were removed. Practice trials were excluded from analyses.

A difference score was created for target reaction time as described in Study 1. Results from the previous two studies suggest a contrast-coded local minus global difference score captures the outcome variable of interest. Based on my prediction, conditions were contrast-coded from least approach motivated positive affect to most approach motivated positive affect. As predicted, the linear contrast was significant, F (1, 46) = 5.79, $p < .05$, $\eta_p^2 = .11$, and indicated that the approach-food picture condition showed the least broad attention, followed by the food picture condition, and then the neutral condition (see Figure 3).

Using the first emotion questionnaire to control for baseline affect, analysis of self-reported high approach positive affect after the picture set using a linear contrast-

coded ANCOVA revealed a significant effect (see Table 1). High approach positive affect increased from the neutral condition to the food condition to the approach-food condition. Because planned contrasts were not predicted for all affect dimensions, one-way ANCOVAs were conducted for moderate approach positive affect, low approach positive affect, and all negative affects. Results revealed significant differences between conditions for moderate and low approach positive affect. Analyses of self-reported negative affects revealed that only high approach negative affect differed significantly across conditions (see Table 1), such that there was significantly less approach negative affect (e.g., anger) in the food and approach-food condition than in the neutral condition.[3]

[3] Because the internal reliability of the high withdrawal negative affect was low, I analyzed individual words; none were significant. Perhaps the low reliability was due to the fact these scores were near the lowest point of the scale.

A

B

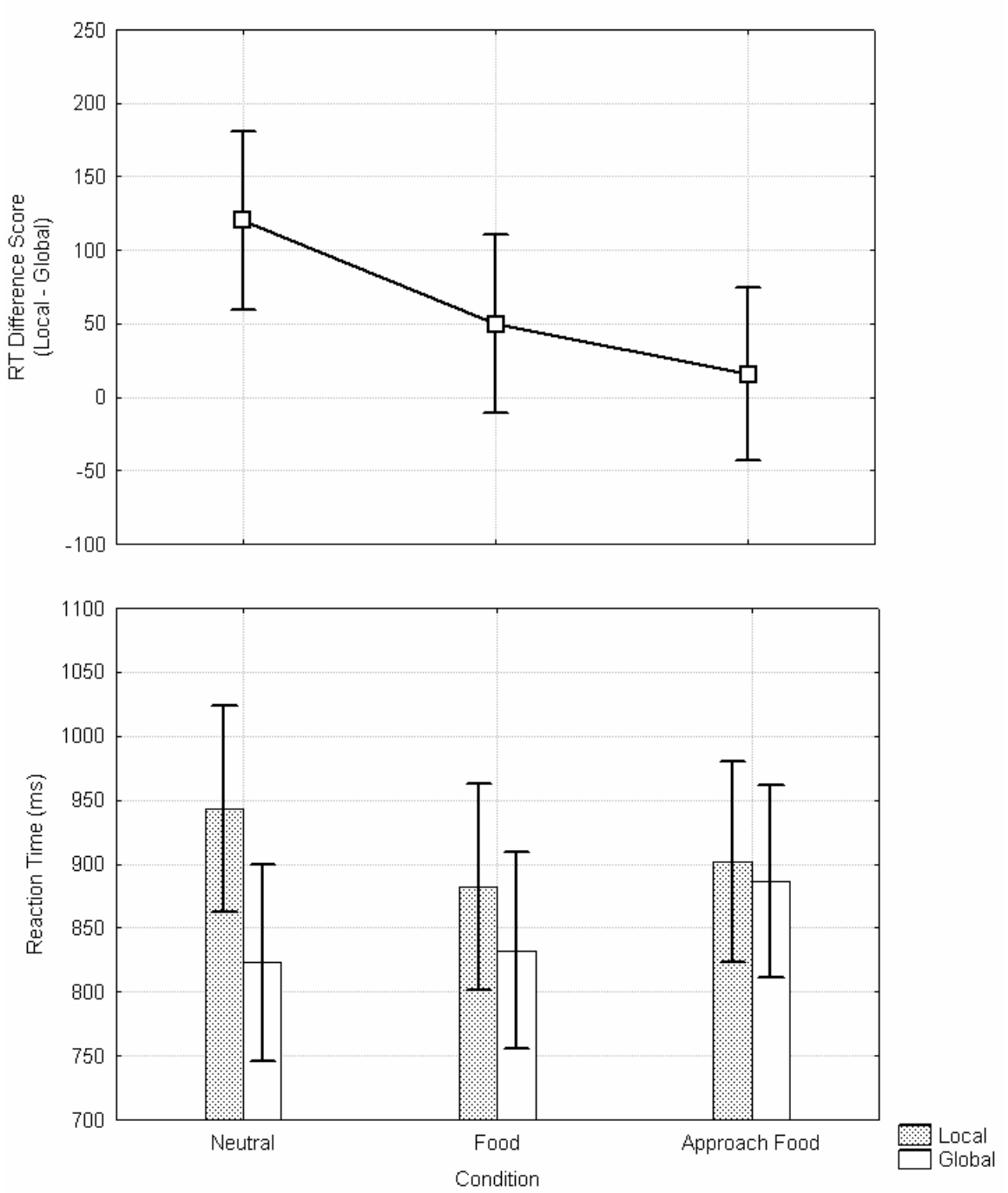

Figure 3. Study 3 reaction times between conditions. (A) Reaction time difference scores across conditions; (B) Reaction times for local and global targets as a function of condition.

TABLE 1

Adjusted mean affect scores across conditions

	Condition				
	Neutral Pictures	Food Pictures	App Food Pictures	F	η_p^2
Emotion Subscale					
Positive High App	2.66 $(.37)_a$	3.32 $(.36)_{ab}$	3.76 $(.35)_b$	4.64*	.09
Positive Mod. App	3.30 $(.30)_a$	4.04 $(.31)_b$	4.64 $(.30)_b$	4.93*	.18
Positive Low App	3.03 $(.29)_a$	3.94 $(.30)_b$	4.60 $(.29)_b$	7.41*	.25
Negative High App	2.24 $(.24)_a$	1.29 $(.24)_b$	1.23 $(.23)_b$	5.55*	.20
Negative High Withdrawal	1.43 $(.10)_a$	1.14 $(.11)_b$	1.22 $(.10)_{ab}$	2.06	.08
Negative Low Withdrawal	1.63 $(.24)_{ab}$	1.21$(.24)_{ab}$	1.28$(.23)_{ab}$	0.91	.04

Note. App = approach, Mod = moderate. Standard errors are reported in parenthesis. Within rows, means with different subscripts are significantly different, $p < .05$. F and η_p^2 values are from one-way ANCOVAs except for Positive High Approach which is the result of a linear contrast. * $p < .05$

SUMMARY AND CONCLUSIONS

Results from Study 1 found approach-motivated positive affective stimuli decreased global attentional focus, causing a less broad attentional focus than neutral picture stimuli. Study 2 replicated this effect using different approach-motivating positive stimuli. Study 3 revealed similar effects in a between-subjects design. In Study 3, approach motivation was manipulated independently of picture type, and results revealed that approach-motivated positive affect caused the greatest decrease in attentional broadening. Evidence from these studies support the hypothesis that approach-motivated positive affect reduces broadening, rather than the increase in broadening found with positive affects lower in approach motivation. These results extend past work on positive affect and attention.

In Study 3, self-reported positive affect (of all types) was greater in the food pictures conditions than in the neutral condition. It is likely that most participants consciously "lump" the experience of positive affect into one category and have difficulty reporting an increase in one type (e.g., high approach positive) and not other types. This is congruent with past work showing that emotions that vary in approach motivational intensity can have different physiological and behavioral characteristics but not subjective characteristics (e.g., Harmon-Jones et al., 2003, 2006).

Some emotion theorists have suggested that positive emotions, such as joy, do not compel an organism to a specific action tendency (Frijda, 1986). Instead, these emotions suggest a comfortable, stable environment and allow for a broadening of

attention and cognition. Such low approach positive emotions may serve an adaptive function for an organism's well being (Fredrickson, 2001). However, positive affect that occurs during approach-motivating circumstances may encourage specific action tendencies, such as tenacious goal pursuit. During goal pursuit, broadening of attention may prove maladaptive as it may lead one away from the current goal pursuit.

In some of the past research on positive affect and attention, increased negative affect caused a reduction of the breadth of attention (Gasper & Clore, 2002). However, other research has found that depressed individuals show broadening of attention and cognition. For example, persons with depression are more creative (Andreasen, 1987; Ludwig, 1994) and show broadening of attention and memory (von Hecker & Meiser, 2005). These findings fit with conceptual views of sadness that suggest it occurs following a "failure of major plan or loss of active goal" and that it causes one to "do nothing and/or search for new plan" (Oatley & Johnson-Laird, 1987, p. 36). In such situations, "a more open, unfocused, unselective, low-effort mode of attention would prove not deficient but, on the contrary, beneficial" (von Hecker & Meiser, 2005, p. 456). This interpretation fits with past views suggesting that disengaging from a terminally blocked goal and becoming open to new and previously irrelevant possibilities might be part of the function of depression and sadness (Klinger, 1975). Although the type of negative affect evoked was not specified, past research that found negative affect caused decreased broadening may have evoked negative affective states that were high in motivation (fear; Gasper & Clore, 2002), whereas the research that found negative affect caused increased broadening used negative affects that were low in

motivation (depression, sadness; von Hecker & Meiser, 2005). Together with the present research, these ideas and findings about low motivation negative affect suggest that low intensity motivations increase broadening, whereas high intensity motivations (regardless of direction) cause a reduction in broadening.

Two concerns might be raised about the present research. First, one might suggest that I should have included a low approach-motivated positive affect condition and observed its effects on attention. However, the broadening associated with low approach positive affect is very well established and not under question. Second, one might suggest that the effects of approach-motivated positive affect are due to arousal. As Lang (1995) and others have found, sympathetic nervous system arousal is associated with motivation. Thus, separating these two constructs may be difficult. For example, an artificial increase in arousal may increase motivation, as past research has suggested (Zillman, 1983).Whereas these concerns merit further research, I believe that the present results are important because they demonstrate that positive affect that is high in approach motivation causes a reduction in attentional breadth, a finding that is opposite to that obtained with low approach positive affect. This finding should broaden theorizing about the relationship between emotions and attention.

In conclusion, the present research provides further evidence that emotions of the same valence can have very different consequences for attention, cognition, and behavior (Lerner & Keltner, 2000). Moreover, it adds to a growing literature focused on the examination of motivational intensity and direction within emotions (Harmon-Jones, 2003). A more complete understanding of positive emotions and their relationships with attentional and cognitive processes will assist not only in better understanding positive emotions and emotion-cognition interactions, but may have important applications for performance. As Izard (1991) noted, positive emotions high in approach motivation are extremely important in the development of skills, competencies, and intelligence.

REFERENCES

Andreasen, N. C. (1987). Creativity and mental illness: Prevalence rates in writers and their first-degree relatives. A*merican Journal of Psychiatry, 144*, 1288-1292.

Bahrick, H. P., Fitts, P. M., & Rankin, R. E. (1954). Effect of incentives upon reactions to peripheral stimuli. *Journal of Experimental Psychology, 44*, 400-406.

Bradley, M. M., & Lang, P. J. (1994). Measuring emotion: The self-assessment manikin and the semantic differential. *Journal of Behavior Therapy and Experimental Psychiatry*, *25*, 49–59.

Brehm, J. W., & Self, E. (1989). The intensity of motivation. In M. R. Rosenzweig, & L. W. Porter (Eds.), *Annual review of psychology* (Vol. 40, pp. 109-131). Palo Alto, CA: Annual Reviews, Inc.

Davidson, R. J., & Irwin, W. (1999). The functional neuroanatomy of emotion and affective style. *Trends in Cognitive Sciences, 3*, 11-21.

Easterbrook, J. A. (1959). The effect of emotion on cue utilization and the organization of behavior. *Psychological Review, 66*, 183-201.

Ekman, P. (2003). *Emotions revealed: Recognizing faces and feelings to improve communication and emotional life*. New York: Times Books/Henry Holt and Co.

Fazio, R.H. (1990). A practical guide to the use of response latencies in social psychological research. In C. Hendrick & M.S. Clark (Eds.), *Review of personality and social psychology* (Vol. 11, pp. 74-97). Newbury Park, CA: Sage.

Forster, J., & Higgins, E. T. (2005). How global versus local perception fits regulatory focus. *Psychological Science, 16*, 631-636.

Fredrickson, B.L. (1998). What good are positive emotions? *Review of General Psychology, 2,* 300-319.

Fredrickson, B. L. (2001). The role of positive emotions in positive psychology: The broaden-and-build theory of positive emotions. *American Psychologist, 56,* 218-226.

Fredrickson, B. L., & Branigan, C. (2005). Positive emotions broaden the scope of attention and thought-action repertoires. *Cognition and Emotion, 19,* 313-332.

Frijda, N. H. (1986). *The emotions*. Cambridge, UK: Cambridge University Press.

Frijda, N. H., Kuipers, P., ter Schure, E. (1989). Relations among emotion, appraisal, and emotional action readiness. *Journal of Personality and Social Psychology, 57*, 212-228.

Gasper, K., & Clore, G. L. (2002). Attending to the big picture: Mood and global versus local processing of visual information. *Psychological Science, 13,* 34-40.

Harmon-Jones, E. (2003). Clarifying the emotive functions of asymmetrical frontal cortical activity. *Psychophysiology, 40,* 838-848.

Harmon-Jones, E., & Allen, J. J. B. (1998). Anger and prefrontal brain activity: EEG asymmetry consistent with approach motivation despite negative affective valence. *Journal of Personality and Social Psychology, 74,* 1310-1316.

Harmon-Jones, E., Lueck, L., Fearn, M., & Harmon-Jones, C. (2006). The effect of personal relevance and approach-related action expectation on relative left frontal cortical activity. *Psychological Science, 17,* 434-440.

Harmon-Jones, E., Sigelman, J. D., Bohlig, A., & Harmon-Jones, C. (2003). Anger, coping, and frontal cortical activity: The effect of coping potential on anger-induced left frontal activity. *Cognition and Emotion, 17*, 1-24.

Isen, A. M. (2002). Missing in action in the AIM: Positive affect's facilitation of cognitive flexibility, innovation, and problem solving. *Psychological Inquiry*, *13*, 57-65.

Isen, A. M., & Daubman K. A. (1984). The influence of affect on categorization. *Journal of Personality and Social Psychology, 47,* 1206-1217.

Isen, A. M., Daubman, K. A. & Nowicki, G. P. (1987). Positive affect facilitates creative problem solving. *Journal of Personality and Social Psychology, 52*, 1122-1131.

Isen, A. M., Johnson, M. M. S., Mertz, E., & Robinson, G. F. (1985). The influence of positive affect on the unusualness of word associations. *Journal of Personality and Social Psychology, 48*, 1413-1426.

Isen, A. M., Niedenthal, P., & Cantor, N. (1992) .The influence of positive affect on social categorization. *Motivation and Emotion, 16,* 65-78.

Izard, C. E. (1991). *The psychology of emotions*. New York: Plenum Press.

Keltner, D., & Haidt, J. (2003). Approaching awe, a moral, spiritual, and aesthetic emotion. *Cognition and Emotion, 17*, 297-314.

Kimchi, R. (1992). Primacy of wholistic processing and global/local paradigm: A critical review. *Psychological Bulletin, 112,* 24–38.

Klinger, E. (1975). Consequences of commitment to and disengagement from incentives. *Psychological Review, 82*, 1-25.

Knutson, B., & Peterson, R. (2005). Neurally reconstructing expected utility. *Games and Economic Behavior, 52*, 305-315.

Knutson, B., & Wimmer, G. E. (2007). Reward: Neural circuitry for social valuation. In Harmon-Jones, E., & Winkielman, P. (Eds.), *Fundamentals of social neuroscience* (pp. 157-175). New York: Guilford Press.

Lang, P. J. (1995). The emotion probe. *American Psychologist, 50*, 372-385.

Lang, P. J., Bradley, M. M., & Cuthbert, B. N. (1990). Emotion, attention, and the startle reflex. *Psychological Review, 97*, 377-395.

Lang, P.J., Bradley, M.M., & Cuthbert, B.N. (2005). *International affective picture system (IAPS): Digitized photographs, instruction manual and affective ratings.* Gainesville, FL: University of Florida.

Lerner, J. S., & Keltner, D. (2000). Beyond valence: Toward a model of emotion-specific influences on judgment and choice. *Cognition and Emotion, 14*, 473-493.

Ludwig, A. M. (1994). Mental illness and creative activity in female writers. *American Journal of Psychiatry, 151*, 1650-1656.

Murray, N., Sujan, H., Hirt, E. R. & Sujan, M. (1990). The influence of mood on categorization: A cognitive flexibility interpretation. *Journal of Personality and Social Psychology, 59*, 411-425.

Navon, D. (1977). Forest before trees: The precedence of global features in visual perception. *Cognitive Psychology, 9*, 353–383.

Navon, D. (1981). The forest revisited: More on global precedence. *Psychological Research*, 43, 1-32.

Oatley, K., & Johnson-Laird, P. N. (1987). Towards a cognitive theory of emotions. *Cognition and Emotion, 1*, 29-50.

von Hecker, U., & Meiser, T. (2005). Defocused attention in depressed mood: Evidence from source monitoring. *Emotion, 5*, 456-463.

Watchel, P. L. (1967). Conceptions of broad and narrow attention. *Psychological Bulletin, 68*, 417-429.

Wright, R. A., & Kirby, L. D. (2001). Effort determination of cardiovascular response: An integrative analysis with applications in social psychology, In M. P. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 33, pp. 255-307). San Diego: Academic Press.

Yovel, I., Revelle, W., & Mineka, S. (2005). Who sees the trees before the forest: The obsessive–compulsive style of visual attention. *Psychological Science, 16*, 123-129.

Zillman, D. (1983). Transfer of excitation in emotional behavior. In J. T. Cacioppo, Petty, R. E. (Ed.), *Social psychophysiology: A source book* (pp. 215-240). New York: Guilford Press.

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BOOK CHAPTERS AND ARTICLES

Harmon-Jones, E., Peterson, C. K., & Gable, P. (2007). Anger. In A. Elliot (Ed.), *Handbook of approach and avoidance motivation*. Mahwah, New Jersey: Lawrence Erlbaum.

Wight, R. D., & Gable, P. A. (2005). Johann Carl Friedrich Gauss. *Encyclopedia of Behavioral Statistics*. London: Wiley.

Wight, R. D., & Gable, P. A. (2005). Louis Lean Thurston. *Encyclopedia of Behavioral Statistics*. London: Wiley.

PUBLISHED ABSTRACTS

Gable, P.A., & Harmon-Jones, E. (2007) Approach Motivated Positive Affect Causes Attentional Narrowing *Conference Proceedings for Society for Personality and Social Psychology*.

Gable, P.A., & Harmon-Jones, E. (2006) Effects of appetitive attitudes towards affective pictures on asymmetrical frontal cortical activity. *Psychophysiology*, *43* (s1), S40.

Peterson, C. K., Gable, P., & Harmon-Jones, E. (2006). Behavioral inhibition system sensitivity predicts right frontal brain activity during and after affective pictures. *Psychophysiology*, *43* (s1), S77.